Message

From: Sobus, Jon [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=3FEF00D2138C4A1DA30B70036A30124C-SOBUS, JON]
Sent: 1/14/2022 6:07:16 PM
To: Ulrich, Elin [Ulrich.Elin@epa.gov]
Subject: FW: AltEn

FYI

From: Boyce, Matthew <Boyce.Matthew@epa.gov>
Sent: Thursday, January 13, 2022 2:23 PM
To: Brennan, Amanda <brennan.amanda@epa.gov>
Cc: Sobus, Jon <Sobus.Jon@epa.gov>
Subject: RE: AltEn

Some answers below, but I want to emphasize that all comparisons/transformation predictions were with respect to mammalian metabolism.

Did you primarily use CTS?
[MB] I primarily used BioTransformer (v3.0), Meteor, TIMES, and QSAR ToolBox to prepare the suspect screening list. I did some additional work comparing the performance of different tools, which included CTS and SyGMa.

Did you use CTS and compare it to other prediction tools/models not in CTS?
[MB] In the comparisons I made, I found CTS's 'Human Phase 1 Metabolism' module (aka ChemAxon's Metabolizer) to be in the middle of the pack for prediction sensitivity (i.e., for all known metabolites, how many were correctly predicted by the model) and precision (i.e., how many true predictions out of all predictions). Since I ran those tests, CTS has also added BioTransformer (I think it's v3.0). From what I saw, TIMES and Toolbox performed the best out of the listed tools. Toolbox is free to use, and uses the same modules as TIMES with some caveats. That being said, there are quite a few considerations to make when selecting a prediction tool: do you need phase 2 predictions? Are you only interested in getting structures or do you want to preserve metabolic maps as part of the metadata? How many generations do you want to predict to? Do you need batch processing? Are you interested in aggregating predictions between tools?

Did you compare the suspect screening lists from the prediction tools to the NTA results?
[MB] We constructed the suspect screening list by aggregating results from BioTransformer, Meteor, TIMES, and QSAR toolbox. I haven't gone too far into using the results of the NTA study to compare performance of the prediction software, in part because the metabolites we've measured thus far have been a subset of the metabolites identified in literature. Using literature data, it was rare for a single prediction software to have full coverage of known metabolites for a single parent compound. So aggregating results generally does help improve sensitivity.

If you were to do this latter comparison, do you think it would be ideal to have different matrices (biological vs environmental, or different environmental matrices (water, sediments, etc)?
[MB] I think it would definitely be worth having biological vs. environmental matrices, since these would have fairly different transformations pathways (in this case I'm assuming microbial metabolism for biological). I'm not quite as familiar with different environmental matrices since I haven't done a lot of work with environmental degradation, so I can't give much feedback on that.

From: Brennan, Amanda <brennan.amanda@epa.gov>
Sent: Thursday, January 13, 2022 12:22 PM
To: Boyce, Matthew <Boyce.Matthew@epa.gov>
Cc: Sobus, Jon <Sobus.Jon@epa.gov>
Subject: RE: AltEn

Hi Matt,

This email is very timely- I was just about to email Alex about the work you had done with the transformation tools. We chatted yesterday about a completely unrelated topic and then digressed into transformation prediction tools as I was looking to chat with someone who had experience with these tools. It would be great to hear all your thoughts and experiences. I'll definitely forward the meeting invite.

I only spent a few minutes playing around on CTS so my knowledge is very limited, but it seems like a very useful tool and one that I can see using for projects I'm currently working on. It seems to pull from a bunch of different prediction models. Did you primarily use CTS? Did you use CTS and compare it to other prediction tools/models not in CTS? Did you compare the suspect screening lists from the prediction tools to the NTA results? If you were to do this latter comparison, do you think it would be ideal to have different matrices (biological vs environmental, or different environmental matrices (water, sediments, etc)? Just a few thoughts I was hoping to chat about at the meeting.

Thanks,
Amanda

From: Boyce, Matthew <Boyce.Matthew@epa.gov>
Sent: Thursday, January 13, 2022 11:57 AM
To: Brennan, Amanda <brennan.amanda@epa.gov>
Cc: Sobus, Jon <Sobus.Jon@epa.gov>
Subject: RE: AltEn

Hi Amanda,

Could you invite me to this meeting?
I have experience using various metabolite prediction tools to prepare suspect screening lists for NTA and think I could contribute to the project.

Best,
Matt

From: Sobus, Jon <Sobus.Jon@epa.gov>
Sent: Thursday, January 13, 2022 11:30 AM
To: Boyce, Matthew <Boyce.Matthew@epa.gov>
Subject: FW: AltEn

Can you reach out to Amanda? I can't find her meeting.

From: Brennan, Amanda <brennan.amanda@epa.gov>
Sent: Friday, January 07, 2022 10:52 AM
To: Sobus, Jon <Sobus.Jon@epa.gov>; Newton, Seth <Newton.Seth@epa.gov>
Cc: Ulrich, Elin <Ulrich.Elin@epa.gov>
Subject: RE: AltEn

Yes, glad to hear all is going well at home!

I'll go ahead and schedule something for your return to the office. We can always cancel depending on what happens with coordination for the larger effort. I think some of the ideas also could be applied to samples from other sites or samples we might already have in-house, so even a quick meeting could be beneficial.

Amanda

From: Sobus, Jon <Sobus.Jon@epa.gov>
Sent: Thursday, January 6, 2022 5:47 PM
To: Newton, Seth <Newton.Seth@epa.gov>; Brennan, Amanda <brennan.amanda@epa.gov>
Subject: RE: AltEn

Hi Seth,

I'm glad to hear that things are going well at home! In response to your question below, by "group" I just mean those interested in participating in the project. I think Elin sent out an email to those individuals yesterday. It sounds like Jill will be helping coordinate some communications. Hopefully that will all start to play out soon.

Just let me know how I can help!

Jon

From: Newton, Seth <Newton.Seth@epa.gov>
Sent: Thursday, January 06, 2022 12:04 PM
To: Sobus, Jon <Sobus.Jon@epa.gov>; Brennan, Amanda <brennan.amanda@epa.gov>
Subject: RE: AltEn

Hi Amanda and Jon,

Ex. 5 Deliberative Process (DP)

Either way, let's try to get something on the books as soon as I'm back on January 17 or that week.

Ex. 5 Deliberative Process (DP)

Thanks,
Seth

From: Sobus, Jon <Sobus.Jon@epa.gov>
Sent: Wednesday, January 05, 2022 10:47 AM
To: Brennan, Amanda <brennan.amanda@epa.gov>; Newton, Seth <Newton.Seth@epa.gov>
Subject: RE: AltEn

Hi Amanda,

Ex. 5 Deliberative Process (DP)

I my opinion, this AltEn project has the potential to be large and I'm nervous that not enough people have volunteered to lead aspects of the work. That being said, I personally think it's wonderful that you are interested in both being involved and leading. I support that 100%.

Here's my proposal moving forward:

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Keep me posted and let me know you I can help,

Jon

From: Brennan, Amanda <brennan.amanda@epa.gov>
Sent: Tuesday, January 04, 2022 8:23 PM
To: Newton, Seth <Newton.Seth@epa.gov>
Cc: Sobus, Jon <Sobus.Jon@epa.gov>
Subject: AltEn

Hi Seth,

Ex. 6 Personal Privacy (PP)

I missed the NTA meeting in which the background and research on the AltEn site was discussed, but I recently spent some time listening to the podcast you recommended and looking at the information on the AltEn Teams Page. I'm very interested in participating and/or proposing a research idea for this that might fall under your or Jon's CSS output, but don't want to duplicate any efforts.

A few thoughts/ideas I was hoping to get some feedback on:

Elin mentioned that you were considering using NTA to identify odor causing agents and Angela Batt is likely interested in the surface water component. It seems like surface water sediments might be another piece that is of interest. Is there another researcher who has expressed interest in looking at contaminants and degradation products in sediment or bioavailability of sediment contaminants (for insects or tadpoles) measured with passive sampling to help identify possible routes of exposure?

Not sure if anyone has shown interest in leading/collaborating on one of the ideas you proposed during the AltEn meeting on 11/30/2021 regarding use of transformation prediction tools (chemical transformation simulator) combined with NTA to discover degradation products, but I would definitely be interested in that research effort. Dust or surface sediments might be a possible matrix for this comparison.

I know you're on leave, so only checking email periodically, but I copied Jon on this email in hopes of getting some initial feedback from you both and in general, expressing interest in more non-targeted research.

Thanks,
Amanda